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(54) Title: **STEREOCOMPLEX HYDROGELS WITH TUNABLE DEGRADATION TIMES**

(57) Abstract: The present invention relates to stereocomplex hydrogels for drug delivery and tissue engineering. The hydrogels comprise block or graft polymers with at least one hydrophilic region and at least two enantiomerically enriched degradable regions, which may represent grafts or terminal blocks. In the hydrogels, degradable regions of opposite chirality form racemic crystallites, leading to the physical crosslinking of the polymers. Furthermore, the significance of the terminal groups of the degradable blocks for the degradability of the hydrogel is disclosed. Hydrogels from polymers whose degradable regions are characterised by the absence of terminal hydroxyl groups are shown to be particularly stable, having long lifetimes and a high potential for sustained drug release over extended periods such as weeks or months. In other aspects, the invention provides methods for the preparation of hydrogel compositions, kits from which the hydrogels can be prepared, and uses of the hydrogels.



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